INVESTIGATION REGARDING THE EFFECTIVENESS OF NITROGEN SOURCES AND CONCENTRATION ON PLANT CHARACTERISTICS IN TOMATO (*LYCOPERSICON ESCULENTUM*)

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ABSTRACT

Tomato is one of the most popular and widely grown vegetable crops in the world. The tomato crop is highly responsive to nitrogen (N) fertilizer application. These studies were conducted to assess the effects of nitrogen sources and concentration on plant characteristics of semi-determinate and determinate types of tomato at Dusan campurean UTM. Data for plant height, number of leaves, leaf branches and nitrogen content of leaves were recorded. After 12 weeks, strong effects of urea and ammonium nitrate were observed on plant height, number of leaves, leaf branch and nitrogen content in the leaf of indeterminate and semi-determinate respectively. Results indicated that the best responses of indeterminate and semi-determinate plant height was120cm and 85cm in 1.2 N g concentration of urea and ammonium nitrate respectively. The effect of nitrogen sources on a number of leaves has been evaluated, the highest number of leaves found in indeterminate variety was 82 with urea treatment while semi-determinate was 71 with ammonium nitrate. Moreover, leaf branches and nitrogen uptake for the both varieties have different responses for nitrogen source, the highest percentage of nitrogen in indeterminate and semi-determinate was 3.31 %, 4.86% while that of leaf branches were 18, 17 respectively in high level of nitrogen concentration of urea and ammonium nitrate. Since both varieties have different genetic backgrounds, they respond differently to nitrogen sources. It is therefore suggested that urea and ammonium nitrate would be better source of nitrogen in indeterminate and semi-determinate types of tomato, rather than ammonium sulphate.

ABSTRAK

Tomato adalah salah satu tanaman sayur-sayuran yang paling popular dan ditanam secara meluas di dunia. Tanaman tomato adalah sangat responsif terhadap aplikasi baja nitrogen (N). Kajian-kajian ini telah dihubungkan untuk menilai kesan sumber nitrogen dan kepekatan pada ciri-ciri tumbuhan jenis separa tentu dan tak boleh tentu tomato di Dusan Campuran UTM. Data bagi ketinggian tumbuhan,bilangan daun, dahan daun dan kandungan nitrogen pada daun telah direkodkan. Kesan kuat urea dan ammonium nitrat telah direkodkan pada ketinggian tumbuhan, bilangan daun, dahan daun dan kandungan nitrogen dalam daun jenis tak boleh tentu dan separa tentu. Keputusan menunjukkan bahawa tindakbalas terbaik terhadap ketinggian tumbuhan jenis tak boleh tentu dan separa tentu adalah 120cm dan 85cm dalam kepekatan tinggi urea dan ammonium nitrat. Kesan sumber nitrogen terhadap bilangan daun telah dinilai dan ia menunjukkan bilangan tertinggi daun didapati dalam varian tak boleh tentu adalah 82 dengan rawatan urea manakala varian separa tentu adalah 71 dengan rawatan ammonium nitrat. Selain daripada itu, dahan daun dan kadar serapan nitrogen untuk kedua-dua jenis varian mempunyai tindakbalas yang berbeza terhadap sumber nitrogen iaitu 3,3160%, 4,8622% manakala dahan daun pula adalah 18, 17 pada kadar nitrogen yang tinggi didalam urea dan ammonium nitrat. Oleh kerana kedua-dua jenis varian mempunyai latar belakang genetik yang berbeza, mereka bertindak balas secara berbeza terhadap sumber nitrogen. Oleh sebab itu, dicadangkan bahawa urea dan ammonium nitrat sepatutnya menjadi sumber nitrogen yang lebih baik dalam varian tak boleh tentu dan separa tentu tomato berbanding ammonium sulfat.